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INDUSTRIAL GEOGRAPHY, ITS MEANING, SCOPE AND CONTENT *

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JUDGING from the content of the many articles which have recently appeared in the various geographical magazines on "Geography in Secondary Schools," "Secondary School Geography in the Middle West," "The Modern Trend of Geography," etc., there is little to say that is new. However, there may be those who are interested in knowing the results obtained in a school where the oft lamented limitations placed on schools through tradition, college requirements, defective texts, laboratory manuals, etc., have been eliminated, and where the course has been shaped according to the best judgment of those in charge to meet the demand of the patrons of the school and the needs of the pupils.

The patrons frequently feel that the school authorities should be able to give definite reasons why each and every course has a place in the curriculum. The questions, "Why should my son take this subject?", and, "Of what value will it be to him after he leaves school?", demand the attention of the teacher and those in authority in the school. If, therefore, the teacher of geography insists upon the "tracing of the contours of a map sheet on thin paper, the construction of maps on elaborate nets, the study of several sheets to show the development of cirques, the seeking of mental development in mud-puddle problems, and the extensive study of twelve different kinds of plains from the map sheets, and makes no mention of their human relations,"[1] he must show *why* the boys should do all this work. Or again, if a teacher has a "class that has studied the contour maps in forty different exercises, and on actual quizzing could locate but four of the map sheets studied, could not give the large physical features of the United States and had no conception of the geographic factors which governed the location of their own city,"[2] and even though students may be able to "name the town on a particular map through which a certain contour passes, give the highest and lowest point on each map studied, and plenty of other similar mechanical matter,"[3]

*An abrigement of a paper read before the Earth Science Section of Central Association of Science and Mathematics Teachers, Cleveland, Nov. 26, 1910.

1, 2, 3—Journal of Geography, January, 1910, pp. 110 to 116.

yet the teacher must answer the questions, "Why should my son take this subject?" and, "Of what value will it be to him after he leaves school?"

The demand thus placed upon the school was one of the factors which led the writer and his co-workers to break away from the traditional physical geography or physiography and attempt building a course which should meet this demand.

The needs of the pupils should be a prime consideration in the organization of a course. The geography teacher must decide whether it is of more value for a boy to know the various theories of glacial movement or to know that the Great Central Plain region north of the Ohio and Missouri rivers has a deeper mantle rock and a more fertile soil because of the former presence of glaciers and consequently has some of the most valuable agricultural land in the world. Shall we spend our time trying to explain to the boys how kames, eskers, drumlins, valley trains, etc., are formed or shall we point out how the glacier decreased the relief in most regions where deposition took place, and hence improved the conditions for agriculture and transportation? Is there not as much interest and keen, straightforward thinking involved in contrasting the areas of glacial erosion and glacial deposition as in trying to figure out how many times the glacier retreated and advanced? And will not the boys in after years appreciate the former fully as much as the latter?

The answer to such questions as these led the writer and his co-workers to the conclusion at which the earth science section of the Central Association of Science and Mathematics Teachers arrived a year ago when it recommended that the course of study in secondary school geography should "be modified so as to include a large amount of human geography, that the final goal should be regional geography in some form, that this regional geography should be based on a thorough study of the essential elements of physiography, and should include the most important principles and details of industrial and commercial geography." Arriving at this conclusion, we at once began the construction of a course to meet these needs which we termed Industrial Geography.

A COURSE IN INDUSTRIAL GEOGRAPHY

The Atmosphere. The work in industrial geography should begin with a study of the gases of the atmosphere. The composition of the air and the uses of the principal gases should be discussed and laboratory experiments to demonstrate the text should be performed. In all this work emphasis should be placed on how the moisture gets into and out of the atmosphere and the influence which it exerts on plant and animal life by modifying the rate of evaporation, the rainfall and the temperature of the earth. In class the student should continually be confronted with the question, "What of it?" This work should be followed by a study

of the temperature and pressure and the resulting general circulation of the atmosphere about the earth. The students are then prepared to begin the study of weather, introduced by a study of the weather map. In this, the aim is to prepare students to predict weather when certain conditions exist and to be able to explain why such conditions usually bring about certain weather changes. The work on weather naturally leads to a study of the climate of the United States.

Before leaving this phase of the subject it may be well to call attention again to *the importance of placing emphasis on human relations to climatic conditions.* The boys like to show that, because the northern states are from 30 to 40 degrees colder than the southern states during the winter months, better shelter, warmer clothes, better food and more fuel are needed by the northern inhabitants, that the growing season is shorter; and that the season during which domestic animals must be fed and sheltered is much longer; that during a short summer provision must be made for a longer winter; that certain lines of outdoor work must be abandoned during the winter months, and that the return for the summer's labor must be sufficient to carry men through the winter months or that other occupations must be carried on during the winter months. They readily suggest that railway traffic is frequently delayed by snow and ice storms and that traffic on the Great Lakes and other water ways must be suspended during the winter months. A discussion of these topics lends interest to the every day affairs of men and it teaches boys to observe and to think about the conditions under which they and men everywhere live.

The Earth's Crust. The second portion of the work in industrial geography should embrace a study of the more common mantle, sedimentary and igneous rocks. This study should include the origin, pronounced characteristics and common uses of each. Laboratory specimens and field excursions will add interest and valuable knowledge to this phase of the work. In this connection a few of the more common crustal movements and disturbances may be discussed, forming a basis for the study of the Block Mountains in the Great Basin region, of the earthquakes associated with the Pacific Coast mountains, and the igneous plateau in Oregon and Washington.

The work of water, wind, ice and snow. This portion of the work would not be complete without a study of the work of surface and ground water, of wind, ice and snow. In the study of ground water the influence of geographic conditions on man can be brought out clearly. The interrogation, "Who cares how near to the surface ground water may be found?" at once brings out the fact that plants are largely dependent on ground water for their food and that they cannot grow when ground water is not found near the surface. This fact grasped, the thought naturally follows that without plants man is practically helpless, for his food supply is de-

pendent upon them. The study of ground water naturally leads to a study of surface water or drainage, since the level of the ground water is commonly determined by the drainage. This study should, of course, include the work of streams and the characteristics which mark the various stages of erosion but it should not end there.

Adaptation of industries to physical conditions. If our study of geography is to give us knowledge which will help us to see how dependent we are on our physical surroundings, we must show how regions with certain characteristics are adapted to certain industries, while regions with other characteristics are adapted to quite different occupations. Thus a region in an immature stage of erosion with its steep slopes, scanty soil and rapid streams has little value for agriculture except in the level portions of the river valleys. The average boy becomes interested when he sees that the forests should be left upon the hill sides to protect not only the uplands but the valleys as well. Every boy is able to advance a number of arguments to show that the forests should be left upon the highlands. The schemes by which the mountaineer overcomes some of the difficulties of transportation appeal to boys and they are in sympathy with him when they realize how he is handicapped by his surroundings.

On the contrary, boys are always interested in seeing that much-eroded mountain regions are adapted to mining, because, (1) the rocks of various strata are exposed and it is easy to find the minerals, and (2) strata, which have long been buried and which are therefore likely to have accumulated mineral deposits, are brought near the surface. We, therefore, find mining cities like Pittsburg and Birmingham located in regions where rivers have cut deep gorges in the rock. Grazing, manufacturing, transportation and various other industries may be discussed in a like manner.

The study of the work of snow and ice becomes vital when the students understand that many of the industries of today are still influenced by the glaciers of the past. Thus some areas are now barren and practically useless because of glacial action; while other areas are the centers of industry and commerce because of the changes which took place during the Glacial Period. Will not a knowledge that the most valuable agricultural land in this country lies in the glaciated area where the amount of soil and mantle rock has been increased, where the soil is most likely to be fertile, since it contains a great variety of disintegrated rock derived from extensive areas and where the relief has been decreased, afford as much satisfaction to the average high school graduate as a knowledge of how glacial striae and grooves may have been produced? Will not a discussion of the influence of the Glacial Period on agriculture, manufacturing, mining, fishing, and transportation involve as much mental development as a guess as to how long a period of time lapsed between the different glacial advances?

Regional Geography. The phases of physical geography thus far discussed will give the student a basis for a study of regional geography that is both systematic and causal. The knowledge thus gained from physical geography should find application in a scientific study of regional geography in which the larger life relations are brought out. This regional geography will acquaint the student with the chief physical features of our country and those of the leading nations of western Europe; it will give him an idea of the resources of this country; it will teach him something of the value, distribution, and relation of the various industries; and most of all, it will show him that the life of a nation is dependent on its resources and hence on those industries which employ the great mass of the people.

In regional geography, the units of study may be determined by physiographic features. This seems to be the easiest and most logical basis by which to determine the units of study, since the physical features are thus quite similar and the industries usually have many characteristics in common. Thus a plain is certain to be adapted to agriculture if it has sufficient rainfall, whether it is found in the northern or southern part of the United States, although the crops grown may depend on temperature. The plains in the northern states produce corn, wheat and oats, while those in the southern states yield cotton, rice and tobacco. But in both sections agriculture is the leading occupation.

Having located the physiographic unit to be considered, the climate, the general characteristics of the surface, the drainage and the soil should be studied. This study naturally leads to a consideration of the agricultural and mineral products. Knowing the physical characteristics, the climate, the farm and the mineral products of the area, the students are prepared to discuss the manufacturing industries. The order in which the topics are studied will vary in different sections. Thus, in the New England region the lumbering and fishing industries should be given special consideration.

The study of each section should emphasize those industries which yield the greatest returns to the mass of the inhabitants. The study which deals with the New England region is not complete unless it shows why this region has produced large quantities of lumber and why it should continue to be a center of the paper industry.

Again the agriculture of the Upper Mississippi Valley is quite different from that of the Gulf region and hence we have an opportunity to place the emphasis on the conditions which cause certain crops to grow in certain areas and on the methods by which these crops are produced.

The most important manufacturing industries are studied in the same manner. The making of cloth and the manufacture of boots and shoes are taken up in connection with the study of the New England Hills. The influence which water power, nearness of raw material and access to

a market have on manufacturing is brought out in this connection and later on the influence of these factors is emphasized in the study of the iron and steel industry and its development.

In connection with all of this work it is possible to place emphasis on the causal relations. By doing this we make the work interesting to the student, we help him to associate events with causes, and teach him to look for a reason for all things.

The year's work closes with a study of the most important nations of western Europe. The study of these nations should familiarize the student with the climatic and physiographic conditions of each country studied and it should acquaint him with the leading industries and the methods by which they are carried on. It should show the student the difference between the intensive methods of western Europe and the extensive methods of this country. And most of all it should point out the needs and demands of these nations so that we may be able to meet them and thus realize the greatest returns for our labor.

In conclusion, industrial geography aims to teach those phases of weather, climate and physiography which are deemed essential to a rational understanding of regional geography. It presents regional geography from a physiographic basis and it places emphasis on the causal relations which exist between the physiographic and climatic conditions and resulting industries, and it aims to bring out the larger life relations. It aims to present locational geography through a thorough map study in connection with regional geography; and lastly, it familiarizes the student with the conditions under which he and his fellow men live, and the needs and demands of the important nations with which our country deals.

There is some consolation in finding that American students are not the only ones who show an inexcusable ignorance of locational geography. An examiner of English schools complains of the same ignorance in Great Britain. In the London *School World* of October, is found a report from which the following is taken:

"In Geography, the examiner states, there are satisfactory signs of more general recognition of the fact that the study of *distributions* is essential: and that no combination of physics, geology, history, or economics can take its place. Candidates, who gave excellent answers to questions on the cotton-manufacturing district of Lancashire or on towns on the coasts of England, not infrequently gave unmistakable evidence (direct or indirect), in answering the map question, that they had no clear idea of the position in England of the places they had been writing about. The need for much more careful and extended use of maps throughout cannot be too strongly insisted on."

AN ORTHODOX ASPECT OF PREDESTINARIANISM

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IN THE foregoing title I disclaim all intent to step on the toes of my good Presbyterian friends. On the whole I like them much. Many, if not most of them are almost as orthodox as I am, though, perhaps, not so strongly predestinarian. And here is the gist of my creed: *Given an area of rich, fertile land—say, a broad river valley—easy of access and favorable in climate, and it is predestined to become a densely peopled region, teeming with human activities, of which commerce is certain to be one of the foremost.*

Now that same valley may be almost anywhere in the world except in a region too cold for fructification and the premise will hold true, time alone being the variable factor. In the past it has come true of the plains of China, of the Mesopotamia, of the Nile, and of the Ganges: it is becoming true of the Amazon, the Congo, and the lower Colorado basins. And a reason therefore is not hard to find. The upper parts of river basins—that is, the parts in which the streams are torrential—are rockwaste factories, and the factory product is spread in level form over the flood plain below. By nature's process of inoculation the rockwaste becomes soil; the soil contains nutrition; and nutrition is followed by life.

Moreover, if the social environment of the human life does not extend beyond the divides of the valley the civilization of the people dwelling therein will be of a very low order—scarcely above savagery at the best. In other words, the plain of civilization is conterminous with the breadth of social environment—the broader the latter, the higher the former. The highest type of civilization is found in the peoples who contribute to all the rest of the world and receive from the rest of the world in return.

For commerce is the chief factor in the diffusion of civilization; indeed the history of commerce is the history of civilization. Compared with it, the newspaper, the school, the mission and literature are negligible factors; even applied science is only a servant of commerce. Modern government is founded upon it and it is the basis of modern political institutions. All the great epochs of American history have been adjustments to a better order of commerce and economics. The divine right of kings has given place to the human right of living the best life that can be lived.

All this brings me to the nucleus of the question, an extract from a letter: *"Many geographers feel that commercial geography appeals so much to the memory and so little to the reason that it has but small edu-*

cational value." I emphasize this quotation, not because it is the opinion of the author—for certainly it is not—but because it voices the belief of a considerable number of educators. To both the premise and the conclusion I strongly object. Certain it is that geographers do not view the commercial or economic side of geography as an exercise of memory; it is equally certain that no study in the school curriculum calls for a broader exercise of the reasoning powers than does commercial geography.

I can understand how a scholar of the type and standing of Professor Davis will be likely to regard physical or rather, physiographic geography as the fundamental and most important side of geography. To this I do not object; indeed, down in my heart I agree with him. It sets forth the category of causes of which economics, or commercial geography represents effects. Moreover I do not see any other divisions of the subject that have a place in common school courses of study. The historical and political features of the study are incidents in commercial geography.

Let us take as an example the fundamental features of the geography of the New England States. Assuming that the pupils have been drilled in the details of memory work—not a difficult matter if they are taught to make the mental images properly—the summation should be somewhat as follows: The southern part of the group of states is densely peopled. The people are there to make their living and not for sentimental reasons. The chief feature of "making a living" is manufacture. Why? Because of the water power. And why the water power? Because a rugged highland of generous rainfall slopes abruptly to sea level. Add to this the intelligence of the people who know how to take advantage of their environment. Moreover, there must be an outside market for the manufactured commodities, and the market is almost the whole world; indeed, there is scarcely a civilized people on the face of the earth that is not the better off for the use of the thousands of articles made in the three southern states of this group. In other words, certain conditions to be summed up as physical geography form a cause; manufacture and commerce are the chief effect; political institutions, good government, good schools, an intelligent people and organization are an effect, and a commerce that is world-wide is an effect; even Boston is an effect, for, were there not the conditions of physical geography that give this New England port the quality of safety, there would be no Boston. All these causes combined have resulted in a high plane of civilization; but of the various causes, commerce and the geography of exchange are the most potent factors.

Let us apply the same reasoning to the prairie region, one almost as densely peopled as the New England plateau. What is the activity that "makes the living?" The growing of foodstuffs. Is the product consumed wholly within the prairie? No; it reaches to a large part of the American continent and to western Europe. Why is this great industry located here? Because of conditions of physical geography. An old sea

bottom has been pushed above sea level, remaining level and unfolded; glacial drift has been swept over it making soil that is right for wheat, corn, and other foodstuffs; and the commerce of the surplus has been transformed into railways, beautiful homes, schools, intelligence, and civilization. Again commerce, because it brings the balance of trade in favor of the people, is the active factor.

It would be easy to carry the illustration to every industrial area on the face of the earth. It is destiny, because it is the effort of the man to acquire and to use his intelligence to learn the secrets of his environment and to adapt himself thereto: it is predestiny because Almighty God has given human intelligence the self-power of development.

But the activity that brings it about is the activity of commerce—that is, the interchange of human thought and intelligence. Once upon a time the Plains of Troy became so densely peopled that the land could not support the multitude. Some were compelled to go elsewhere. "Hinc Aeneas, Anchisae filius, cum multo quem ferrum Graecorum pepercerat, fugit et in Italiam venit." Possibly I do not quote it quite correctly for it is fifty years since I have seen it in print. But it was strictly a commercial transaction. Out of the flight to Italy came the wool industry at Alba Longa; came the founding of the trading port which grew into the city of Rome; came the overthrow of the Tarquins; came the conquests of Italy, Sicily, and Carthage; came the Latinizing of all western Europe. And it was all a matter of commercial geography.

A trivial incident, the blockading of the routes of commerce between Europe and India, resulted in turning commercial activities to the ports of the North and Baltic Seas. There, commerce encountered the institution known as the feudal system. Now, the latter imposed conditions on the people that kept them on a plane scarcely higher than that of barbarism. Had you and I been of the people of the time, Mr. Editor, we should have had a choice between two alternatives—to have been a bondman wearing the thrall of a feudal lord, or to have been an outcast; and in either case the question of predestinarianism would not have troubled us.

The transfer of commercial activities to western Europe was the beginning of the end of feudalism and when the smoke of two hundred years' battle had cleared away, western Europe was on a materially higher plane of civilization. The wheels of commerce were whirring on the foundations of the feudal castles. Commerce had given freedom, franchise, law, science, and education to millions of people. To this was added the discovery of a new world and its rise of democracy in both Europe and America. It was the learning of a geography lesson, it is true, but commerce was the schoolmaster.

The dividing line between Europe and Asia is the line that separates the commercial from the dormant activities. Western Civilization is what it is because of commerce and trade routes. Oriental civilization is the

stagnation of two thousand years—dormant, but, in a few instances, ready to spring into activity. The past twenty-five years in China, and the past fifty in Japan have witnessed greater progress than was made in the twenty centuries of their history preceding. Is it commerce?—yes. Is it destiny? No; it is predestiny.

How long is my arm? Normally one might say that it is thirty inches; but if I have my cane, my arm is twice as long. And given railways and fast steamships, I can reach clear around the world and touch myself in fifty-four days; or with telephone, telegraph and ocean cable I can speak to myself clear around the world in thirty minutes. Perhaps it is commerce that enables me to accomplish this, but I should prefer to think of it as the struggle of the human mind for light and power, obeying the dictates of a Divinely implanted instinct.

COMMERCIAL GEOGRAPHY IN THE SOUTHERN HIGH AND MANUAL TRAINING HIGH SCHOOL, PHILADELPHIA

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THE COURSE in commercial geography covers a period of three semesters with recitations four times weekly. It is really divided into two parts; one semester given to the study of the industries and two semesters to commercial geography in its broadest scope. This is a boys' high school and the classes contain about forty boys, ranging in age from fourteen to seventeen years.

EQUIPMENT. Much depends upon the equipment in the teaching of any subject. It is surely as important in commercial geography as in other sciences. It can be truly said that commercial geography is a laboratory study. Many of the things mentioned in this article will belong, of course, to any well equipped laboratory but are simply mentioned to show the equipment that we have on hand in this high school. A case twenty feet long and seven feet high well arranged for the display of commercial material is placed in the front of the room. Maps of the different continents, including the United States and Pennsylvania and the City of Philadelphia adorn the walls. A twenty-four inch globe showing trade routes as well as political divisions is accessable to all the students. A projection lantern, one of Bausch & Lomb's best, is in place with a ten inch curtain for the projection of pictures. A reflectroscope would be very desirable but has not, as yet, been added to the equipment. Four dozen stereoscopes are in stock so that each pupil has his own scope.

ILLUSTRATIVE MATERIAL. In the teaching of the industries it is desirable to have at hand sets of actual materials illustrating the story of production from the raw or natural condition to the completely prepared product. These sets are difficult to obtain unless one visits the locality which is the home of the leading industries. The writer has taken the trouble to visit the wheat center at Minneapolis, the corn center of the Middle West, the rice, sugar and cotton of the South, the coal, oil, and silk of the East, the lumber of the Northwest, and has collected bottle specimens tracing the story in full. The school is very fortunate in having the Philadelphia Museums near by. These are well equipped with material and the directors are glad to help the schools by supplying the same. In addition to what the writer has collected, the Philadelphia Museums have very generously furnished material to illustrate nearly every one of the industries.

To help to make the story concrete and definite, pictures must be used. These have been collected in sets of lantern slides of which, of course, a school can own only a limited number. These are supplemented by stereographs which can be purchased in large numbers but have the disadvantage that only one pupil at a time can see the picture. In addition to lantern slides and stereographs, illustrations from magazines and pictorial papers are collected and mounted on card-board for distribution in the class.

TEXT MATERIAL. MacFarland's "Commercial and Industrial Geography" and Trotter's "Commercial Geography" are used as text-books in the class. A sufficient number of copies of the best book on commercial geography in existence is available so that each pupil may have a copy

for class use. This is Freeman and Chandler's "Commercial Products." It is taken for granted that a well stocked library is at hand containing the newer text-books on commercial geography as well as books intended for reference use.

THE STUDY OF AN INDUSTRY. It might make the subject more definite to describe a single industry, suppose sugar to be taken as an illustration.

This is one of the broadest of the industries, as it includes all the different sources, cane, beet, corn, maple, sorghum and honey. The descriptive matter in as many texts as possible is studied by the members of the class and is given in recitation. This is supplemented by lectures from the experience of the writer in visiting these different localities and studying carefully the manufacture of sugar from the material available. Fresh cane is secured from boats just coming in from Cuba which land at our wharves. It is easy to get a large variety of samples of raw sugar from Louisiana, from Cuba and from the Philippines; and as Philadelphia is the home of the largest sugar refineries, it is possible to get nearly every form of refined sugar. It is usual to raise a sugar beet so as to have it available for the opening of the fall term. Its growth is traced from the seed, and the process of sugar making studied and then the refined product of beet and cane are compared. The spile used in tapping the maple trees, both the wood and the metal, are available for class examination. It is not easy to have a sample of the sap, and not possible to make it on account of its delicate flavor; but samples showing maple syrup and many of the fake syrups made from corncobs are in the hands of the pupils for examination. Dried sorghum cane, samples of honey and a large variety of corn and corn products are given to the pupils for examination and comparison. Political geography is studied at the same time so that the locations of places producing the different kinds of sweets are well established in the student's mind. Outline maps are filled in by the students to emphasize and make definite the idea of locality.

One lesson period is taken for the stereographs. Immediately upon the assembling of the class the scopes are given to the students. The stereographs having to do with the sugar industry are sorted and arranged in the order intended for study. Each pupil is given one picture. The examination is made by all at one time but each student is looking at a different picture and a moment is taken for the discussion of the picture after reading the supplementary information on the back of the card. A lesson in visualization is a valuable adjunct in teaching the pupils to see and describe what is seen. At a given signal the pictures are moved on and to each pupil comes a new stereograph. This method is continued during the entire recitation hour during which the members of the class have had an opportunity to see the entire set. It is an excellent plan to have the student write a story or theme at this time,

making use of the knowledge that has been gained. This will correlate the work in English, and Science. It is well to follow this lesson with the lantern. Not all schools will have a set of lantern slides to illustrate the sugar story, but at considerable trouble and expense the writer has collected a set of some seventy-five slides which illustrates very fully this story. These slides are thrown upon the screen and different pupils are allowed to tell what they know in regard to the picture illustrating the process. It would be an ideal ending to the lesson if it were possible to take the class to the sugar refinery, but this is very difficult, as access to the factories cannot be gained because the proprietors feel the responsibility for the safety of their visitors around the machinery, and they are also likely to interfere with the workmen.

EXCURSIONS. Located in such a favorable locality as is this high school, it is possible to make a good many excursions. One of the most important is to the Philadelphia Museums, which have the largest collection of commercial products brought together in any city. The management is especially courteous and helpful to the schools and arranges for lectures to the students at favorable times. It is possible to make such a trip each semester. Arrangements are made before hand with the curator for the study of some special industry which he illustrates with the material found in the museum and with a lantern lecture in which he uses the very finest of lantern slides. Sometimes these lectures are given on an industry, sometimes on a country. During a recent visit, the curator gave to the classes an illustrated lecture on Panama which was highly

valuable and gave the pupils a very definite idea of the canal zone. It was an exceptional lecture owing to the fact that the curator had just returned from an extensive trip in South America. Time is taken by the classes while at the museums to visit and inspect other industries in addition to the one being studied. Each pupil has the opportunity to visit the museums about six times during the course.

The sugar industry is considered one of the most important as it is possible through it to make a careful study of the entire globe. Every part of the United States and its possessions is involved, as well as Europe, and the islands of the sea.

ELEMENTARY FORESTRY. There is no more timely question and no one that is being more fully discussed at the present time than the conservation of natural resources. Papers and magazines are full of information, and the country is learning to take care of the forests. This comes in very properly as a part of commercial geography for it is closely allied to the lumber industry. In addition to the regular material for wood or lumber study, there has been collected by this department samples of the seeds of all the important American trees. Samples of the woods of the most important trees have also been collected. To the reference library have been added the important tree books. The government documents on forestry have been secured in sufficient quantities for class use. These are studied together with the newspaper and magazine articles. The government has been very kind in the loaning of pictures of the national forests, and of lantern slides, so that the students are able to get a comprehensive idea of what the national forests are, how they are administered and how their greatest enemy, the forest fires, are fought. It has been our good fortune to have a member of the Forest Service at Washington visit the classes and give a talk on the care of our trees. In this state are located two excellent forestry schools; one, The Forestry Academy at Mt. Alto and the other, the regular department of the State College. The writer has had the pleasure of visiting both these schools and of bringing supplementary information to the classes. It is possible to awaken a great deal of interest in this state, as Pennsylvania is one of the foremost states in scientific forestry. The head of each of the schools above mentioned, very kindly visited our classes and gave them lectures with practical illustrations. Part of the day was occupied with a visit to a forest nearby under the direction of these experienced guides. A study of the seeds and of the growth of small trees was made under their direction. It has been possible later to follow up these excursions with additional trips to the parks to study and identify the different trees.

THE POINT OF VIEW IN ELEMENTARY COMMERCIAL GEOGRAPHY

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IN practically every commercial geography text in use in American schools two distinct points of view are presented; one the commodity as a unit, the other the country as a unit. Each of these points of view is good; each permits a logical deploying of the geographical influences at work in commerce; each invites constructive geographic interpretation. But the two points of view do not mix well. The commodities of commerce are as a rule produced in many different lands. If the country is taken as the unit of presentation, much repetition is inevitable, for the geographic conditions of production are likely to be much the same in the various lands producing a given commodity. Then too the producing regions differ in interest or significance to us, and our own country far overtops all others in importance to us, calling for a much more extended treatment than any other land. In like manner some commodities which we produce largely, as corn or cotton, loom larger than some others of equal significance which we do not so largely produce.

Practically every author has attempted to work both these points of view at once, usually by treating America very fully, and attempting a rather complete topical treatment of each commodity as it arises in a discussion of America. This works fairly well so long as America has a monopoly in a given commodity, but in practically every case, the fact that America is the point of view rather than the commodity, makes it difficult, often almost impossible to establish a world perspective for the commodity itself. To discuss wheat in America and then touch upon it with additions at various times in the course, under each country in Europe and several other lands, is not a very satisfactory way to build up a world relation for wheat, and the repetition in the condensed paragraphs which the space of the ordinary book compels, is likely to become a weariness to the flesh.

We cannot blink the fact that we are undertaking too much when we try in an elementary text to treat of all commodities and all countries. The result is inevitable. The composition ends up in tabloid doses of statistics, which as the condensation grows, becomes too concentrated for a wholesome diet. In our texts the country point of view dominates, while the commodity and the interpretation of commerce have suffered.

Now one of these points of view at a time is adequate, and of the two the most logical one to begin with, is the commodity. Let us make a

survey of the general geographical conditions of production, then go at once to a study of the commodities. The commodity then becomes the unit. The world becomes the stage. The geographic influences bearing on the production of a given commodity are made definite once for all, and the commodity located in every land, and a world relation established. Thus wheat is looked upon as a grass, its qualities developed in response to a subarid mid-latitude climate, and it is seen to find its optimum in very definite climate and soil conditions. The wheat producing areas are then thought of in one survey, and all the other relations of flat land, dense or sparse population, low or high state of civilization, with attendant use or lack of labor-saving machinery, and of good or poor agricultural methods, the development of transportation facilities, and the commercial relations to wheat consuming lands,—these and other influences are all marshaled to the completion of one concept, Wheat.

Such a study is educative in a high degree. Each commodity thus studied offers an excellent exercise in scientific geography,—a correlation of all the physical influences at work, with all the life responses, ending in human and social opportunity.

A selection of such commodity topics may be made, large enough for the major part of a term's or year's work: no one term may cover all it would be desirable to study. Then a quarter or so of the term may well be devoted to the geography of commerce, in which the flow of traffic between regions is studied. The purpose here is to bring out the reasons for inter-regional trade, which, beginning in regional difference of endowment, finds how the physical geographic influences favor or hinder trade, how and where and why trade routes, and trade centers are established, and how trade changes human environment and development.

Such a field is large enough for an elementary study of commercial geography. It would be most profitable if a year could be devoted to it. It would be a great advantage if it could be preceded by a thorough course in physiography. And it would be quite as desirable if an equal time could be devoted to a more advanced study of the economic geography of America and a few other chosen lands to follow it.

The point I most wish to make is, that we defeat our educational purpose by attempting to cram into one elementary course, conditions, commodities, commerce, and countries; and that it will be a most profitable program to divide the field, and to devote the elementary work to the commodity and its travels.

AN ITEM FOR COMMERCIAL GEOGRAPHY

By W. M. Davis

Harvard University, Cambridge, Mass.

IF SCHOOL and college courses in commercial geography are intended eventually to contribute to the development of international commerce, they ought to include some anthropogeography or ethnology; enough, indeed, to make it clear to every student that the manners, customs, beliefs and morals of other peoples than his own deserve sympathetic study and respectful consideration, even if on no other ground than a selfish wish for more profitable business relations as a result. There can be little question that a recognition by our early frontiersmen of Indian ideas regarding right and wrong would have diminished the wretched conflicts that marked our advance inland from the Atlantic coast; but our aggressive frontiersmen were usually self-selected on grounds far different from those of a gentle consideration of the Indian's point of view. There can be no doubt that a better understanding on our part of Mexican formalities and courtesies would lessen the misunderstandings and animosities that are only too frequent on both sides of our southern border, as well as facilitate harmonious commercial intercourse with our next-door neighbors; but the alert and pushing American too often learns little and cares less about Mexican manners before undertaking his business journeys, and he therefore frequently offends those whom he would be glad, even only on the selfish ground of business profit, to please.

A striking illustration of the harm that follows from ignorance and disregard of another people's customs is given in an article by Baron Rudberg the title of which may perhaps be translated as "Personal and Judicial Liability among the Chinese" (*Buerg- und Haftpflicht im chinesischen Volksleben.* Globus, XCVIII, 1910, 285-287.) The author describes the consequences that result from the occasional failure on the part of foreign merchants in China, when engaging a native clerk, to exact the personal guarantee of good character that every Chinese merchant would regard as essential. The need of the guarantee is based on the extraordinary sense of responsibility that is felt by each member of a family for his near relatives, or by each member of a business company for his associates: the responsibility goes so far that relatives are held answerable for a misdemeanor or crime committed by a fugitive offender. The majority of those foreigners in China who complain of the dishonesty of the Chinese are themselves to blame, because they have neglected to demand the personal guarantee which, for the Chinese, lies at

the foundation of all business dealings. Such foreigners exert a demoralizing influence. The failure to demand the customary guarantee is regarded by the Chinese as a direct temptation to dishonesty, which has corrupted many young Chinese in the service of foreigners. The severity of Chinese morals is such that dishonesty or other lapse from virtue is followed by exclusion from social relations; and among the thousands of wretches who die every year from hunger on the streets of Chinese cities, some are those who have not lived up to their guarantees.

It is not here a question whether the ways and the views of other peoples are better or worse than our own ways, on which we are prone to look with a rather blind complacency. The point is, that in the course of dealings with other peoples—and the study of such dealings occupies a large part of commercial geography—it is advantageous, even essential, to recognize their point of view as to honesty and morality. Training in commercial geography should therefore include at least enough anthropogeography or ethnology to emphasize this important principle, and also if possible some specific accounts of certain peoples in order to illustrate the principle by examples.

An interesting case of an "oriental peculiarity," somewhat irrelevant to the above considerations but geographically interesting, is found in Rudberg's statement that the Chinese use the terms "right" and "left" only in relation to their own bodies, while the positions of external objects with respect to each other are expressed by compass directions. The foreigner is often surprised to hear children say that a book, for example, is on the north side of a table, or to hear a carpenter say, "Drive that nail a little farther to the west."

COMMERCIAL MEXICO

MEXICO has an area the same as that of the United States east of the Mississippi River leaving out Michigan and Wisconsin. It is also about equal in area to Great Britain and Ireland, Germany, France and Austria-Hungary. It has a population of about 15,000,000, while the same area in Europe has about 180,000,000.

In 1877 the value of the exports from Mexico was $26,000,000, and that of the imports in 1875 was $18,000,000. In the fiscal year ending June 30, 1910, the value of the total foreign trade was $220,547,000, of which $129,508,000 was the value of the exports and $97,039,000 that of the imports. From this it will be seen that the exports are now five times and the imports nearly five and one-half as great as they were thirty-three years ago when Diaz first became President.

Though the mineral resources of Mexico have been worked from time

immemorial and with particular activity since the conquest of the country by the Spaniards, so much so that the wealth of Mexico in the precious metals became proverbial, these resources, far from being exhausted, at the present time are greater than ever, and offer one of the most inviting fields to the investor and to the scientifically equipped mining engineer. From the chart of exports by products it will be seen that the value of all mineral products exported in 1910 was $78,260,000, or sixty per cent of the total value of all exports.

The value of the output of the gold mines of Mexico during 1909 was $22,500,000, of which the value of the gold exported was $19,600,000. This value exceeded that of any previous year and is more than double what it was in 1904.

The production of silver in 1909 amounted to 2,292,000 kilograms, valued at $38,550,000, of which $36,920,000 worth was exported. The output of all the silver mines in the world in 1909 was 6,768,829 kilograms, of which the Mexican mines produced 2,259,830 kilograms, and the United States 1,674,704. Mexico, therefore, produced one-third of all the silver in 1909 and is the leading silver-producing country in the world.

The value of the Mexican copper production in 1909 was $13,085,000; this is larger than any preceding year. More than one-half of the copper exported from Mexico is sent to the United States and one-fourth to France. Mexico is second only to the United States in the production of copper. Lead in the form of galena is a common constituent of the silver-bearing veins of Mexico and may be regarded as an ore of silver. The value of the exports of lead in 1910 was $3,404,000, which is a greater value than in any other year. Mexico ranks third in the production of lead, being exceeded in the quantity produced by the United States and Spain. Although Mexico ranks fifth in the production of quicksilver it does not produce enough to supply its own needs. Mexico ranks second in the production of antimony and the exports of this metal in 1910 were valued at $1,093,000. Zinc to the value of $575,000 was also exported.

Vegetable products rank next in importance to minerals in the export trade of 1910, their value being $38,862,000, or about one-half that of mineral products.

The annual value of the products of the soil and of cattle marketed is $200,000,000. Of this amount the following represent the value of a fair average crop: Corn, $50,000,000; cotton, $17,000,000; henequen, $16,000,000; wheat, $13,000,000; sugar and molasses, $13,000,000; spirits, $10,000,000; coffee, $8,000,000; beans, $6,000,000, and woods, $5,000,000. Among the food products, corn, which does not appear in the exports, furnishes the most important article of food—the tortilla—of the common people of Mexico. It is cultivated in every state. There is not suffi-

cient wheat grown to supply the demand. Formerly it was imported mainly from the United States, Argentina and Canada. The frijol, or Mexican bean, is, with the tortilla, the staple article of food.

Cotton is also grown in Mexico, but owing to the increase in the cotton mills not more than one-half of the cotton consumed is produced in Mexico. Most of the foreign supply comes from the United States.

Chicle, the basis of chewing gum, comes entirely from Mexico, and is the sap of the chicle tree. The value of the export of chicle was $1,700,000 in 1910, $500,000 more than in 1909 and the largest ever exported. Mexico is rich in woods, the value of the exports of furniture and building woods in 1910 being $1,200,000.—*Commercial America.*

A SYMPOSIUM ON COMMERCIAL GEOGRAPHY

THE Journal of Geography asked several authors of text-books of Commercial Geography to write brief statements setting forth their views on the primary aims in teaching Commercial Geography in the high schools, the phases of the study which should receive the emphasis, and how they sought to attain these ends in their books. Several furnished the statements asked for. In other cases we have taken the statements from the prefaces of the books written by these authors. It is believed that a collection of the opinions of men who have given much careful thought to the subject will be useful in bringing the subject of commercial geography before the teachers of the country, and in giving them a clearer idea of how to get from the study the best educational results. It is so easy to make commercial geography a study of endless details and statistics, that some geographers have not been cordial toward it.

(By Edward Van Dyke Robinson)

Commercial geography in the high school I conceive to be fundamentally a disciplinary subject and only incidentally informational. In my book I have consequently tried to present the subject so as to make students think.

To this end, it is essential that there be a single, definite purpose which shall control absolutely the choice of matter and methods; otherwise commercial geography, in place of being a unified science, becomes merely an *omnium gatherum* of disconnected facts to be memorized.

The purpose of commercial geography, as I understand it, is to explain the localization of industries—that is, where they are carried on, and why. It follows that all those factors, and only those factors, which affect the localization of industries, have any proper place in commercial geography. The subject is thus much broader than the study of the

economic effects of physical environment, since that is only one factor in the localization of industries. At the same time, this conception excludes a multitude of topics and details which have sometimes been included merely because "useful for merchants to know."

All industries involve the use of land, labor and capital in the form of tools or machinery. The localization of industries is consequently subject to three sets of controls: the natural, originating in the land, or physical environment; the human, originating in the varying characteristics of men; and the economic, originating in capital goods and economic forces.

The control exercised by nature, however, underlies and conditions both of the others: consequently the logical method of treatment is by reasons, which brings to light differences in the natural endowments of different parts of the world, rather than by commodities. Only by thus advancing from the relatively simple and concrete problems presented by the study of the great world industries, can the student be trained to think consecutively.

The foregoing conditions have governed my choice of matter and method. Moreover, in order to render statistics available as food for comparison and reference, I have put them into the form of diagrams and tables. To the same end, I have made large use of colored maps, which fix the attention and stimulate thought in a way that black and white maps never do. Further, I have provided a pamphlet of problems, topics and references for collateral reading. Finally, I have tried to make the style concrete and vivid, believing that interest is the key to successful teaching.

(By Charles Morris)

The study of geography, like all studies, has been a plant of slow growth. For many years it continued greatly lacking in interest to students, dealing in barren details, and failing to clothe their dry bones with living flesh. To give vitality to this study far more is needed than a mere knowledge of the names and localities, of cities and counties, oceans and continents, and the general surface features and political divisions of the earth. The name and place of a city teach us little. What have been the causes that led to its growth in that particular locality? What developed in it, here a special form of manufacture, there commerce of a particular kind? Why is this region settled by farmers, that by miners or a third by foresters? These are a few of the multitude of questions that might be asked and the answer to which is sure greatly to widen our conception of the significance of geographical study.

To give information of this desirable kind is the aim of industrial and commercial geography. Its purpose is to present the surface of the earth as nature made and peopled it and as man has modified it. In a study of this kind, our own country naturally comes first, as the pivot around

which, for us, the whole world revolves. Bound together by intangible links of commercial intercourse, all the nations of the earth are becoming practically one. A knowledge of the products and commerce of one goes far to teach us the characteristics of all, and it is the nature and scope of this unity in diversity that the geography of commerce and industry seeks to make known.

(By Spencer Trotter)

The teaching of commercial geography should emphasize the principles rather than specific details which are of use solely as illustrations of these principles. These details bulk largely in any phase of the subject. Such, for example, are relative percentages and yearly trade conditions which are of passing interest only. The underlying principles, drawn from statistics and from a study of both past and present conditions—the biological, geological and historical bases, like climate, soil, topography and drainage, fauna and flora and the nature and needs of populations—are the leading features for study and presentation. In fact, a good course in the natural history of man might well serve as a basis on which to build a clear conception of commercial geography.

Commerce is a complex of conditions intimately concerned with the growth and expansion of races and peoples. It is the dominating factor in the environment of the higher social state. An inherited trade instinct has developed in the exploitation of resources as conditioned by regional geography. This last, therefore, is of prime importance in the consideration of any commercial problem. In teaching commercial geography, I would group the subject matter under three main heads: (1) regional geography, the natural, physical features of the land in question and its relations to the world at large; (2) the history and nature of its population; (3) the development and present features of commercial activity, the principles of which depend upon the conditions found in the foregoing groups. One must always remember that it is not "commerce" that is being taught or studied, but *commercial geography*, with a distinct emphasis on the latter word.

(From the Preface of Adams' Commercial Geography)

The author has endeavored to limit the contents of this text-book of Commercial Geography to those dominating features of commerce and industry that should be most strongly impressed upon the student. The facts of commerce are treated as the effect of conditions that determine the quality and the quantity of trade. The effort is made throughout the book to connect cause and effect; to trace the great and small streams of commerce, and also to show the causes that give them direction and volume. Geographic and many other controlling influences, such as inventions, governmental aids or impediments, and the improvement of products, industrial processes, and means of transportation, are there-

fore made prominent. * * * The conditions entering most extensively into trade are sufficiently numerous, and attention has been confined to these commodities because they have a greater educational value in any attempt to elucidate for the class-room the nature of commerce and its underlying principles.

Each product is treated in the chapter relating to the commerce of that country in which the production or manufacture of the commodity is specially prominent. * * * Comparatively few statistics are included in the text. * * * No statistics have been used that are not believed to represent normal conditions.

(From the Preface of Gregory, Keller and Bishop's Commercial and Physical Geography)

* * * * There are behind the facts of trade, as behind all facts, certain principles about which they can be grouped, and which serve to lend them life and meaning; and it is interpretation rather than arbitrary memorizing which is of educational importance. It is the reference to principles which tends to fix knowledge in the mind in a vital way; the principles form the nucleus about which a command of data can be extended.

* * * * Other social factors, in addition to the political, have entered largely into the controlling of trade, and so must not be neglected in the interpretation of its data. But the complexity of these social influences is so great that it is difficult to make an educational beginning with them. Nor are they the only factors that exercise a determinative influence upon exchange; there are controls in physical nature that are more concrete and simple of apprehension, and which have been, and still are, of great ultimate importance in the molding of trade, and, indeed of human affairs in general. These, for want of a better and comprehensive term, might be called the environmental (or geographical) factors; they cover man's and society's relations with the whole natural environment.

* * * * Having in view, then, the influence of physical environment upon the most fundamental and material of human activities, we think that the study of the currents of exchange, involving, as that must, the consideration of the prime economic functions of production, consumption, and distribution, sets us in the midst of the issues upon which we hope to throw light.

(From the Preface to Gannett, Garrison and Houston's Commercial Geography)

Although Commercial Geography is concerned largely with the conditions of interdependence existing among the different parts of the civilized world, the deeper purpose of the study is the discovery of the causes

that have been most active in creating these conditions. That this study is of vital importance is attested by the fact that in ignorance of, or indifference to, such causes, nations have often adopted policies that have retarded their progress and worked disastrously against their welfare. If, therefore, in the fact of competition that grows keener as the years advance, we would maintain our superior position, we must not grope blindly, but must know the causes of success and failure, and act with the clearest understanding.

With such ideas in mind this book has been planned. It begins with a study of the influence on industrial progress of climate and topography, of social conditions, of manufacturing and transportation facilities, and of financial conditions, giving due weight to each as a factor in economic development.

When this foundation is laid, the student is ready to consider with a broader interest the chief commercial products of the world, their relative importance in different regions, and the modern processes of manufacture of the staple articles consumed. * * * It is believed that this study will give the student a good foundation for whatever business the future years may hold in store for him, an enduring pride in his country and loyalty to its institutions, and a readiness to serve it as a good citizen in any capacity that may be allotted to him.

COMMERCIAL NOTES

By W. E. Hopper

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THE opening on January 1, 1907, of THE RAILWAY ACROSS THE ISTHMUS OF TEHUANTEPEC, MEXICO, marked the beginning of the large and rapidly increasing traffic between the eastern coast of the United States and the western ports of America. This railway is 190 miles in length and is operated in conjunction with lines of ocean steamers at either end and is supplied with facilities for transferring freight from steamer to railway and from railway to steamer. At the same time the value of American merchandise crossing by way of the Panama Railway has increased considerably. During the year 1910, eighty-two million dollars' worth of merchandise originating in the United States crossed from the eastern part of the country to the western by way of the Isthmuses of Panama and Tehuantepec. Fifty million dollars' worth of this total moved westwardly, four-fifths passing thence northward to the Pacific coast of the United States, and the other fifth being distributed along the Pacific coasts of Mexico, Central and South America. The other thirty-two mil-

lion dollars' worth moved eastwardly across the Isthmus, two-thirds of it originating in Hawaii and one-third along the western coast of the United States. The Hawaiian sugar destined for the eastern coast of the United States, which formerly made the trip by sailing vessel around Cape Horn, now passes by steamer to the Isthmus of Tehuantepec, is there transferred to the railway, carried across the Isthmus, and again placed on steamers passing thence to the refineries at Philadelphia and New York. The steamers carrying this sugar return from New York loaded with general merchandise which is transferred to the Tehuantepec Railway and re-transferred to steamers which pass up the western coast of the United States, to San Diego, San Francisco and Puget Sound. These steamers then return to Hawaii and reload with sugar for the eastward trip.

The 1910 export figures illustrate THE CHANGING CHARACTER OF OUR FOREIGN COMMERCE. The principal characteristics of our foreign trade in 1910 are larger imports, larger exports of manufactures especially lumber, agricultural implements, lubricating oil, iron and steel and leather, and a marked decrease in exports of foodstuffs such as flour, wheat, hams, bacon, fresh beef and live cattle.

The highest record of exports of foreign merchandise from the United States was reached in the year 1910. The value of these exports was 35 million dollars, a gain of 41 per cent. over 1909 and of 33 per cent. over the annual average for the decade ending with the year 1910. However, this high value of 35 million is but 2 per cent. of the total exports of the year. A marked contrast to this is noted in the commerce of the United Kingdom. The value of foreign and colonial merchandise from that country during the year ending June 1910 was 20 per cent. of the total of 2,462 million dollars. The geographic position of the United Kingdom, as the center of a great empire with colonies and dependencies, for which she serves as a distributor of their products, would account in part for these relatively large exports of foreign and colonial merchandise. Then too, the large British ports have been for years the termini of traditional trade routes for certain articles. The principal countries to which the foreign merchandise was exported from the United States in the year 1910 are:—Canada, the United Kingdom, Germany, France, Cuba and Mexico.

THE FOREIGN COMMERCE OF JAPAN in the year 1910 shows a loss of 15 per cent. in European merchandise, a loss of 43 per cent. in American products, and a gain of 27 per cent. in Asiatic products. British India leads all other countries in the value of its imports into Japan. This large increase in the 1910 importations from India occurred chiefly in raw cotton, due largely to the high prices of cotton from the United States. The United States supplies Japan's raw cotton but in years of

exceptionally high prices of American cotton, the shorter stapled and lower priced cotton of India is drawn upon. Thus in 1910 the quantity of cotton drawn from India more than doubled, while that from the United States fell off more than one-half. During the same period a decrease in the imports of cotton goods, with the loss falling chiefly on Great Britain has occurred.

During the same year in which the quantity of cotton drawn from India more than doubled we find that the cotton exports from the United States exceeded in value by more than 60 million dollars the highest record ever before made. This total of 530 million dollars, however, does not represent an increase in quantity exported but a higher export price. The average export price in 1910 was 14½ cents per pound which is higher than in any year since 1874.

The United States is by far the world's largest producer of cotton, having a production for the season 1909–10 of over 10,000,000 bales of 500 pounds each. Two-thirds of this production is exported while about one-third of the crop is usually retained for domestic use. India ranks second, with a production of 4,186,000 bales, China third, Egypt fourth, Russia fifth and Mexico sixth with 125,000 bales.

The countries which purchased the 530 million dollars' worth of cotton exported in 1910, named in order of amount purchased, are: the United Kingdom, Germany, France, Italy, Spain, Canada and Japan.

Two hundred million dollars' worth of iron and steel manufactures were exported from the United States during the calendar year 1910, a larger total in value than in any earlier year. The largest exportation prior to 1910 was 197 million dollars' worth in the calendar year 1907, while in 1902 the total was but 98 million dollars. In fact iron and steel manufactures now form nearly one-fourth of the total value of manufactures exported.

What are the principal articles forming this enormous total of manufactures exported, and to what parts of the world do they go? The facts show that practically every country of the world receives and utilizes in one form or another the products of our iron and steel manufacturing establishments, and that practically all the important classes of these products are included in the list of exportations. Our cash registers are recording business transactions in practically every country of Europe, in various countries of North and South America, China, Japan, India, the Dutch East Indies, Siam, the Straits Settlements, Australia, New Zealand, British Africa, Portuguese Africa, Egypt, and the Canary Islands. Our electrical machinery goes to more than 75 different countries and colonies. Our printing presses are performing service in most of the civilized countries. American windmills are exported to more than 70 countries and colonies of the world. Locomotives are sent to British South Africa, Korea, Japan, Egypt, Santo Domingo, Costa Rica,

India, Hongkong, New Zealand and Portuguese Africa. American typewriters are distributed to more than 80 different countries and colonies. American sewing machines go to an equal number of countries.

Coal and coke sent out of the United States in 1910 aggregated 65 million dollars in value; 20 years ago it was about 7 million; and 30 years ago, 2 million. Thus the value of coal exported to foreign countries in 1910 is practically double that of 10 years ago, and 22 times as much as that 30 years ago.

About one-third of the coal exported is anthracite. The growth in the exportation of bituminous has been of late more rapid than that of anthracite.

The countries to which this coal is now sent are chiefly, and quite naturally, those comparatively near, Canada, Mexico and the West Indies.

While the value of coal exports is rapidly increasing, and now forms an important factor in the foreign trade, the quantity exported still forms a very small proportion of the entire product. The figures of the Bureau of Statistics show that approximately 5% of the product of our coal mines now passes out of the country.

The total coal production of the country is in round terms about 75 million long tons per annum of anthracite, and approximately 350 million of bituminous, the estimated value at the mines being, of anthracite about 160 million dollars, and of bituminous approximately 400 million dollars.

Details of the export trade of the United States in 1910 just completed by the Bureau of Statistics, Department of Commerce and Labor, show increases in exports of manufacture in nearly every line, and decreases in nearly all classes of foodstuffs exported. The one article of natural production which shows a marked increase in value is cotton, of which the exports in 1910 were 531 million dollars, against 462 million in 1909, this increase being due, however, solely to higher prices. Practically all classes of meats show a decline in the value exported.

The figures thus far received indicate that the total value of foodstuffs exported in 1910 will be about 345 million dollars against 535 million in 1907.

The table which follows shows the leading ten articles exported in the calendar years 1910 and 1909 (in millions of dollars):

	1909	1910		1909	1910
	Millons of dollars			Millions of dollars	
Cotton, unmanufactured	461.9	530.8	Boards and planks	32.4	41.2
Copper, pigs, bars, etc	89.4	89.0	Tobacco, leaf	36.7	36.1
Oil, illuminating	67.8	55.6	Agricultural implements	27.3	31.3
Lard	48.8	45.9	Corn	25.4	28.0
Wheat flour	50.0	43.0	Coal, bituminous	24.3	26.7

RECENT CENSUS FIGURES

CITIES OF OVER 100,000 POPULATION: 1910

CITY	1910	1900	% inc.	CITY	1910	1900	% inc.
Albany, N. Y....	100,253	94,151	65.0	Minneapolis, Minn.	301,408	202,718	48.7
Atlanta, Ga.....	154,839	89,872	72.3	Nashville, Tenn...	110,364	80,865	36.5
Baltimore, Md...	558,485	508,957	9.7	Newark, N. J....	347,469	246,070	41.2
Birmingham, Ala.	132,685	38,415	245.4	New Haven, Conn.	133,605	108,027	23.7
Boston, Mass....	670,585	560,892	19.6	New Orleans, La..	339,075	287,104	18.1
Bridgeport, Conn	102,054	70,996	43.7	New York, N. Y..	4,766,883	3,437,202	38.7
Buffalo, N. Y....	423,715	352,387	20.2	Oakland, Cal.....	150,174	66,960	124.3
Cambridge, Mass.	104,839	91,886	14.1	Omaha, Nebr....	124,096	102,555	21.0
Chicago, Ill.....	2,185,283	1,698,575	28.7	Paterson, N. J....	125,600	105,171	19.4
Cincinnati, Ohio..	364,463	325,902	11.8	Philadelphia, Pa..	1,549,008	1,293,697	19.7
Cleveland, Ohio..	560,663	381,768	46.9	Pittsburg, Pa....	533,905	451,512	18.2
Columbus, Ohio..	181,548	125,560	44.6	Portland, Ore....	207,214	90,426	129.2
Dayton, Ohio....	116,577	85,333	36.6	Providence, R. I..	224,326	175,597	27.8
Denver, Colo....	213,381	133,859	59.4	Richmond, Va....	127,628	85,050	50.1
Detroit, Mich ..	465,766	285,704	63.0	Rochester, N. Y..	218,149	162,608	34.2
Fall River, Mass.	119,295	104,863	13.8	St. Louis, Mo....	687,029	575,238	19.4
Grand Rapids, M'h.	112,571	87,565	28.6	St. Paul, Minn...	214,744	163,065	31.7
Indianapolis, Ind.	233,650	169,164	38.1	San Francisco, Cal.	416,912	342,782	21.6
Jersey City, N. J.	267,779	206,433	29.7	Scranton, Pa.....	129,867	102,026	27.3
Kansas City, Mo.	248,381	163,752	51.7	Seattle, Wash....	237,194	80,671	194.0
Los Angeles, Cal.	319,198	102,479	211.5	Spokane, Wash...	104,402	36,848	183.3
Louisville, Ky...	223,928	204,731	9.4	Syracuse, N. Y...	137,249	108,374	26.6
Lowell, Mass....	106,294	94,969	11.9	Toledo, Ohio.....	168,497	131,822	27.8
Memphis, Tenn..	131,105	102,320	28.1	Washington, D. C.	331,069	278,718	18.8
Milwaukee, Wis..	373,857	285,315	31.0	Worcester, Mass..	145,986	118,421	23.3

CITIES OF OVER 250,000 POPULATION: 1910

	POPULATION		RANK			POPULATION		RANK	
CITY	1910	1900	1910	1900	CITY	1910	1900	1910	1900
New York..	4,766,883	3,437,202	1	1	San Francisco	416,912	342,782	11	9
Chicago.....	2,185,283	1,698,575	2	2	Milwaukee..	373,857	285,315	12	14
Philadelphia	1,549,008	1,293,697	3	3	Cincinnati..	364,463	325,902	13	10
St. Louis...	687,029	575,238	4	4	Newark.....	347,469	246,070	14	16
Boston.....	670,585	560,892	5	5	New Orleans	339,075	287,104	15	12
Cleveland...	560,663	381,768	6	7	Washington.	331,069	278,718	16	15
Baltimore...	558,485	508,957	7	6	Los Angeles.	319,198	102,479	17	34
Pittsburg...	533,905	321,616	8	11	Minneapolis.	301,408	202,718	18	19
Detroit.....	465,766	285,704	9	13	Jersey City.	267,779	206,433	19	17
Buffalo.....	423,715	352,387	10	8					